

REMARKS

In the Office Action, the Examiner rejected claims 2 and 3 based on a Japanese publication and claim 11 based on a French publication. A copy of the translation of each of these publications is enclosed.

Claims 1, 3-5, and 8-11 have been amended; dependent claims 12 and 13 have been added; and claims 6 and 7 have been cancelled without prejudice to resubmit them. Claims 6 and 7 have been cancelled to reduce the aspects of the invention claimed in the application and, thereby, simplify the response.

Claims 1, 4, 5, 9 and 10 are patentable over U.S. Patent No. 5,660,863 (hereinafter Nakano). Each of these claims includes a porous medium having a porosity of about 50% or more. Nakano teaches directly away from such a porous structure. In particular, Nakano explains that a slurry is packed densely in the interstices between individual fibers of a fibrous preform (see column 5) and that the resulting structure may have a very small pore content, e.g., 15% in porosity (see column 6, line 47). Consequently, claims 1, 4, 5, 9, and 10 are patentable over Nakano.

Claims 2 and 3 are patentable over the Japanese publication. Each of these claims defines a porous medium which comprise two portions having a predetermined porosity. As explained in Applicant's specification, porous media may be made by independently pressing first and second portions of a porous medium. By independently pressing these first and second portions, it is possible to predetermine the porosity of each portion independently of one another. While these predetermined porosities may be identical, substantially similar, or different they nonetheless may be predetermined independently of one another and the porous medium defined by claims 2 and 3 have the advantage of this flexibility.

The Japanese publication fails to disclose or suggest this aspect of the porous medium defined by independent claims 2 and 3. According to the Japanese publication, an inflated rubber dye presses against the interior of a slurry contained in a hollow mold to create a homogenous, high-density molding. Nothing in the Japanese publication allows for independent predetermined porosities of separate portions of a porous medium. Japanese publication even fails to disclose a porous medium, merely noting that the invention described in the publication pertains to technology for manufacturing sintered products of fine ceramics and metal and a method for molding feed powder before sintering. Accordingly, it is respectfully contended that claims 2 and 3 are patentable over the Japanese publication.

Claim 8 is patentable over U.S. Patent No. 5,417,917 (hereinafter Takahar). Claim 8 defines a porous medium comprising a mass of sintered inorganic particles having a porosity of 70% or more. Takahar fails to disclose or suggest this invention. Takahar is able to achieve

Takahar's method for the preparation for an open cell porous metallic material merely provides a porosity of less than 70% (see the Abstract and Table 14). Consequently, independent claim 8 is unpatentable over Takahar.

Claim 11 is patentable over the French publication. Claim 11 defines a mold apparatus comprising first and second dies which separately press first and second portions of a slurry to provide first and second portions of inorganic particles having predetermined densities. As previously explained, one of Applicants' methods for processing a slurry allows considerable flexibility in arranging the predetermined densities of various portions of a pressed slurry. The French publication fails to disclose or suggest this aspect of the invention. Rather, the French publication describes an isostatic compression process and fails to disclose the flexibility of providing independent predetermined densities. Accordingly, it is respectfully contended that independent claim 11 is patentable over the French publication.

Conclusion

The application is considered in good and proper form for allowance, and the Examiner is respectfully requested to pass this application to issue. If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,



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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Charles LOVE et al.

Application No. 09/763,597

Art Unit: 1723

Filed: July 2, 2001

Examiner: Krishnan S. Menon

For: POROUS STRUCTURES AND
METHOD AND APPARATUS FOR
FORMING POROUS STRUCTURES

**AMENDMENTS TO CLAIMS MADE IN
RESPONSE TO OFFICE ACTION DATED AUGUST 6, 2002**

Amendments to existing claims:

1. (Amended) A method of forming a porous medium comprising:
applying pressure to a first portion of a medium precursor including inorganic particles;
separately applying pressure to a second portion of the medium precursor; and
sinter bonding the inorganic particles together to form a porous medium having a porosity of about 50% or more.
3. (Amended) A porous medium comprising:
a porous sintered inorganic body portion having a first end and a porous sintered inorganic end portion closing the end of the body portion, the porous body portion and the porous end portion comprising a unitary structure and each portion having a predetermined porosity.
4. (Amended) A porous element comprising:
a porous medium of sintered inorganic particles; and
a porous substrate, at least a portion of the sintered inorganic particles being disposed within pores of the porous substrate mechanically interlocking the porous medium and the porous substrate, wherein the porous element has a porosity of about 50% or more.

5. (Amended) A process for making a porous element comprising:
contacting a porous substrate with a slurry including a liquid medium and inorganic particles; and
sintering the inorganic particles together within pores of the porous substrate to mechanically interlock the sintered inorganic particles to the porous substrate and form a porous element having a porosity of about 50% or more.
8. (Amended) A porous medium comprising:
a mass of sintered inorganic particles having a porosity of ~~greater than about 50%~~ 70% or more.
9. (Amended) A method comprising:
forming a mixture including at least a liquid medium, a plurality of inorganic particles having a nominal first size and a plurality of inorganic particles having a nominal second size, said first size being less than the second size; and
sinter bonding the plurality of inorganic particles having a nominal first size and the plurality of inorganic particles having a nominal second size together to form a porous medium having a porosity of about 50% or more.
10. (Amended) A porous medium comprising:
a first plurality of inorganic regions having a first nominal size;
a second plurality of second inorganic regions having a second nominal size, wherein the first nominal size is less than the second nominal size, and wherein the first plurality of inorganic regions is interspersed between the second plurality of inorganic regions; and
a plurality of bonds interposed between the first plurality of inorganic regions and the second plurality of inorganic regions, wherein the porous medium has a porosity of about 50% or more.
11. (Amended) A mold apparatus comprising:
a mold cavity arranged to contain a slurry including inorganic particles;
a first die arranged to press a first portion of the slurry in the mold cavity; and a second die arranged to separately press a second portion of the slurry in the mold cavity, wherein the first die and the second die separately press the first portion and the second portion, respectively, to provide first and second portions of inorganic particles having predetermined densities.